November 1999

APHA Edition

NTP Update

National Toxicology Program

NATIONAL TOXICOLOGY PROGRAM LIAISON AND SCIENTIFIC REVIEW OFFICE

Sandra V. Large, Director

P.O. Box 12233
MD: A3-01
Research Triangle Park,
NC 27709-2233

(919) 541-0530
Fax: (919) 541-0295
E-mail:
liaison@starbase.niehs.nih.gov

NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

NATIONAL INSTITUTES OF HEALTH

We are pleased to provide the following information to update our readers on programs and initiatives of the NTP, as well as to highlight meetings open to the public. We invite public input and participation in all aspects of our programs.

DHHS' Report on Carcinogens (RoC)

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- **Chemicals Under Review for the 10th Edition of the RoC**
- **Public Meeting to Review New RoC Nominations January 20-21, 2000 (rescheduled date)**

NTP Center for the Evaluation of Risks to Human Reproduction

- **Solicits Public Input**
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The NTP Update is issued approximately four times each year. If you wish to subscribe to our "list-server" and receive these "Updates" and news announcements electronically, write to http://ntp-server.niehs.nih.gov ***or send email to*** ntpmail-request@list.niehs.nih.gov ***with the word "subscribe" as the body of the message.***

DHHS' Report on Carcinogens (RoC)

The NTP prepares the RoC for the US Department of Health and Human Services for the purpose of identifying substances, mixtures of chemicals, or exposure circumstances associated with technological processes that are "known human carcinogens" or "may reasonably be anticipated to be

human carcinogens."

9th Edition of the RoC

The following 24 substances or exposure circumstances are in the final stages of review for listing in (or delisting from) the 9th edition of the RoC. Recommendations from multi-level review groups and the public comments have been received; and the NTP expects to provide recommendations regarding listings or delistings to the Secretary of Health and Human Services by the end of the year. Submission to Congress and publication of the 9th Report is anticipated in early 2000.

Alcoholic Beverage Consumption
Boot and Shoe Manufacture and Repair
1,3-Butadiene/106-99-0
Cadmium & Cadmium Compounds/7440-43-9
Chloroprene/126-99-8
Diesel Exhaust Particulates
Dyes Metabolized to Benzidine
(Benzidine Dyes as a class)
Environmental Tobacco Smoke
Ethyl Acrylate /140-88-5 **(Delisting)**
Ethylene Oxide/75-21-8
Isoprene/78-79-5
Methyl-t-Butyl Ether/1634-04-4
Nickel Compounds
Phenolphthalein/77-09-8
Saccharin/218-44-9 **(Delisting)**
Silica, Crystalline (Respirable Size)/7631-86-9
Smokeless Tobacco
Strong Inorganic Acid Mists Containing Sulfuric Acid
Tamoxifen/10540-29-1
2,3,7,8- Tetrachlorodibenzo-p-dioxin (TCDD)/1746-01-6
Tetrafluoroethylene/116-14-3
Tobacco Smoking
Trichloroethylene/79-01-6
Solar Radiation and Exposure to Sunlamps and Sunbeds

The primary uses or exposures to these substances and the recommendations regarding listing/delisting made by three review groups can be accessed on line at http://ntp-staff.niehs.nih.gov/NewHomeRoc/9thConsideration.html

Or requested from NTP at the address given below.

10th Edition of the RoC

The following 9 substances or exposure circumstances have been nominated for the 10th Report and will be reviewed in public session January 20-21. A second group of nominations to be considered for the 10th Report will be announced in early 2000 and will be reviewed during that year. Publication of the 10th Report is expected in 2002.

Beryllium and Beryllium Compounds (CAS No. 7440-41-7)

Primary Uses or Exposures: Fiber Optics and cellular network communications systems, aerospace , defense and other industry applications. To be reviewed for possible updating of current listing of beryllium and certain beryllium compounds to a known human carcinogen in the 10th Report.

2,2-bis-(bromomethyl) –1,3-propanediol /3296-90-9

Primary Uses or Exposures: Used in a fire retardant in unsaturated polyester resins, in molded products, and in rigid polyurethane foam. To be reviewed for possible listing in the 10th Report.

2,3-Dibromo-1-Propanol /96-13-9

Used as a flame retardant, as an intermediate in the preparation of the flame retardant tris(2,3-dibromopropyl) phosphate, and as an intermediate in the manufacture of pesticides and pharmaceutical preparations. To be reviewed for possible listing in the 10th Report.

Dyes Metabolized to Dimethoxybenzidine (Dimethoxybenzidine Dyes as a Class)

Dyes formerly widely used for leather, paper, plastics, rubber, and textile industries. To be reviewed for possible listing in the 10th Report.

Dyes Metabolized to Dimethylbenzidine (Dimethylbenzidine Dyes as a Class)

Dyes formerly widely used for leather, paper, plastics, rubber, and textile industries. To be reviewed for possible listing in the 10th Report.

IQ (2-Amino-3-methylimidazo[4,5-f]quinoline) /76180-96-6

Found in cooked meat and fish.

Styrene-7,8-oxide /96-09-3

Used mainly in the preparation of fragrances and in some epoxy resin formulations. To be reviewed for possible listing in the 10th Report.

Vinyl Bromide /593-60-2

Used commercially since 1968, primarily in the manufacture of flame retardant synthetic fibers. To be reviewed for possible listing in the 10th Report.

Vinyl Fluoride /75-02-5

Used commercially since the 1960's, in the production of polyvinylfluoride which is used for plastics. To be reviewed for possible listing in the 10th Report.

Background Summary Documents

Background documents for the above nominations are now available to the public. These background documents include all available data relevant to the criteria for inclusion or removal of candidate substances or exposure circumstances in the RoC.

Additional information including background documents, the 8th edition of the RoC, review meetings, etc. can be accessed from the NTP Web Home Page at: http://ntp-staff.niehs.nih.gov/ *and the Environmental Health Information Service web site at* http://ehis.niehs.nih.gov/

Paper copies can be obtained from:

Dr. C. W. Jameson
Report on Carcinogens
79 Alexander Drive, Bldg. 4401
Room 3127, MD EC-14
P.O. Box 12233
Research Triangle Park, NC 27709
phone: (919)541-4096, fax: (919)541-2242, email: jameson@niehs.nih.gov

Public Meeting to Review New RoC Nominations
January 20-21, 2000

The NTP Board of Scientific Counselors will review the substances listed above in January 20-21, 2000. The meeting will take place in the Washington DC area.

To receive additional information on the meeting please contact Ms. Angie Wilson at NIEHS/PO Box 12233, Research Triangle Park, NC 27709, phone (919) 541-3971 or fax: (919) 541-0295 and by email: wilson9@niehs.nih.gov

NTP Center for the Evaluation of Risks to Human Reproduction

In line with the goal of the National Toxicology Program to provide toxicological evaluation on substances of public health concern, the NTP has established the Center for Evaluation of Risks to Human Reproduction. The Center will provide scientifically-based, uniform assessments of the evidence for reproductive and developmental toxicity of man-made or naturally occurring chemicals or chemical mixtures.

Nominations of chemicals to be evaluated through the Center are solicited from the public and scientific communities, including industry, Federal, state, and local governments, academia, environmental groups, citizens, and workers. All nominations will be considered and prioritized based on a preliminary evaluation which will include literature searches and review by the core committee described below. A listing of exposures under consideration for evaluation will be published in the Federal Register, the NTP Newsletter, and through press advisories with the request for public review and comment. Once selected for evaluation, a request for comments and data, as well as the nomination of scientific experts for that particular review, will be solicited.

The initial capacity for conducting assessments will be limited to 2-3 per year. Chemicals selected for evaluation will be reviewed by expert panels of approximately 10-15 scientists selected for their expertise in various aspects of reproductive toxicology and other relevant areas. These panels will develop reports addressing the reproductive health risks to the human population of a specific chemical or a chemical mixture. Panel meetings will be open to the public and will include the opportunity for public comment.

The goals of the individual assessments are to 1) interpret for and provide to the general public information about the strength of scientific

evidence that a given exposure or exposure circumstance poses a hazard to reproduction and the health and welfare of children; 2) provide regulatory agencies with objective and scientifically credible assessments of reproductive/developmental health effects associated with exposure to specific chemicals or classes of chemicals, including descriptions of any uncertainties associated with the assessment of risks; and 3) identify knowledge gaps to help establish research and testing priorities.

The Executive Summary and the final report of the expert panel will be published in Environmental Health Perspectives and will be announced and disseminated widely. Each assessment will appear as well at http://cerhr.niehs.nih.gov. A special effort will be made to summarize these reports in terms that can be understood by those who are not scientifically trained.

Scientists representing NTP agencies and Sciences International, Inc., the contractor who will support the Center, will constitute a core committee which will provide the initial review for nominations, select the expert panel membership and establish the meeting agenda.

Oversight will be provided through the NTP Board of Scientific Counselors', a chartered peer review group of scientific experts primarily from outside the government. Center activities and priorities will be presented to the Board at least annually. All Board meetings will be held in open session and will include opportunity for public comment.

Public Input Solicited/Encouraged

The process includes opportunities for the public to 1) nominate chemicals for evaluation, 2) comment on nominations and the prioritizing and selecting of chemical nominations for evaluation, 3) comment on the evaluation of any particular chemical at the time of the expert panel meetings, and nominate scientists for the expert registry and/or a particular review. The public is encouraged in this initial phase of the Center operations and on a continuing basis to nominate chemicals or chemical mixtures for review through the Center and/or suggest scientists to be added to an Expert Registry from which reviewers will be appointed to serve on ad hoc panels that will assess the reproductive and developmental toxicity of selected agents.

Nominations of chemicals or chemical mixtures should be accompanied by the reason for the nomination and, whenever possible, appropriate background information, data, or literature citations.

Suggestions for scientists to be added to the Expert Registry should be accompanied by a description of their expertise and if possible a curriculum vitae. All chemical nominations and suggestions for scientists to be added to the Expert Registry should be forwarded to:

NTP Center for the Evaluation of Risks to Human Reproduction
1800 Diagonal Road
Suite 500
Alexandria, VA 22314
webmaster@cerhr.niehs.nih.gov
http://cerhr.niehs.nih.gov.

Review of Phthalates

The first evaluation of the Center is a review of phthalates. The phthalates under review are:
Butyl benzyl phthalate, di(2-ethylhexyl) phthalate, di-isodecyl phthalate, di-isononyl phthalate, di-n-butyl phthalate, di-n-hexyl phthalate, and di-n-octyl phthalate. The phthalates were selected based on their high production volume, extent of human exposures, use in children's products, and/or published evidence of reproductive or developmental toxicity.

Expert Panel Established

Kim Boekelheide, MD, PhD, Brown University; Bob Chapin, PhD, NIEHS; Mike Cunningham, PhD, NIEHS; Elaine Faustman, PhD, University of Washington; Paul Foster, PhD, Chemical Industry Institute of Toxicology; Mari Golub, PhD, Cal/EPA; Rogene Henderson, PhD, Inhalation Toxicology Research Institute; Irwin Hinberg, PhD, Health Canada; Bob Kavlock, PhD, EPA/ORD; Ruth Little, ScD*, NIEHS; Jennifer Seed, PhD, EPA/OPPT; Katherine Shea, MD, North Carolina State University; Sonia Tabacova, MD, PhD**, FDA; Shelley Tyl, PhD, Research Triangle Institute; Paige Williams, PhD*, Harvard University; and Tim Zacharewski, PhD*, Michigan State University.

*Unable to attend the second Phthalate Expert Panel meeting
**Added to the Panel to assist in the evaluation of literature and identification of research and testing needs in epidemiology.

Charge to the Panel:

To rigorously evaluate all relevant data and reach a conclusion regarding the strength of scientific evidence that exposure to a chemical may or may not present a risk to human reproduction or development.

1. Evaluate all reproductive and developmental toxicity studies in humans and animals for quality, completeness, and sufficiency. Determine consistency of reported effects within and among species. Briefly summarize relevant individual studies.

2. Review and summarize related studies paying particular attention to studies of general toxicity, pharmacokinetics, genetic toxicity, and mechanisms of toxicity, within and across species. Both *in vivo* and *in vitro* studies will be included.

3. Determine, to the extent possible, patterns of use (such as timing, duration) and exposure (such as dose, route) to humans.

4. Integrate this information using a weight of evidence approach. Determine how human, animal and other data can reasonably be used to predict

reproductive or developmental effects in humans under particular exposure conditions.

5. Provide judgments, including qualitative statements of the certainty of the judgments, that an agent presents a potential risk to human reproduction and/or development. Describe the major factors that contributed to these judgments. State the exposure circumstances under which such risk might be expected to exist.

6. Identify specific areas of uncertainty (such as inadequate pharmacokinetic data in a given species) that would prevent a more definitive assessment of human risk.

7. Identify research and testing needs that, if met, would significantly reduce the uncertainty inherent in the stated judgments of risk.

August 1999 Panel Meeting

The Center conducted its first Expert Panel meeting August 17-19, 1999 in Alexandria, Virginia. Fifteen scientific experts met to evaluate literature on the reproductive and developmental toxicity of the seven phthalate esters listed above. In addition to their own deliberations, the Panel heard presentations from 3 groups (Health Care Without Harm, Chemical Manufacturers Association, American Council on Science and Health) that had conducted reviews of the potential health effects of phthalates, as well as comments from the public. The product of the expert panel will be a scientific monograph on each of the selected phthalates addressing the possible reproductive and developmental toxicity of these chemicals and the potential for human hazard. The monographs will include data evaluations, an integrated evaluation of the data, and a consensus statement on each chemical evaluated. These monographs will be published in Environmental Health Perspectives and will be available on the web at http://cerhr.niehs.nih.gov/

Prior to this meeting, panelists reviewed existing literature in their areas of expertise and provided other Panel members with their summary evaluations. This effort involved the review of nearly 1,000 reports or publications covering animal and human studies in general, developmental, and reproductive toxicity and information on human exposure. During the meeting, the Panel began the process of writing integrated evaluation documents that address the nature and consistency of the literature reviewed, relevancy of experimental models to humans, and human exposure. The work of the Panel was not completed. Integrated evaluation documents were drafted and reviewed by the full Panel for the following 3 phthalates: butyl benzyl phthalate, di(2-ethylhexyl)phthalate, and di-n-octyl phthalate. Further discussion of these draft documents and formulation of summary statements will take place at the second Phthalate Expert Panel Review. The integrated evaluations on the four remaining chemicals (di-isodecyl phthalate, di-isononyl phthalate, di-n-butyl phthalate, and di-n-hexyl phthalate) are being revised or written and will be discussed when the Expert Panel reconvenes in December.

Phthalate Expert Panel Continues Review, December 15-17

The integrated evaluations on the four remaining chemicals (di-isodecyl phthalate, di-isononyl phthalate, di-n-butyl phthalate, and di-n-hexyl phthalate) will be discussed at the Expert Panel meeting being held December 15-17. Following agreement on the integrated evaluations, consensus summary statements will be developed by the Panel members for each of the seven phthalates. These narrative statements will reflect a consensus opinion of the Panel as to the developmental and reproductive toxicity of these chemicals in experimental models and will address the potential significance of these results to human reproduction and development.

The review will take place at Hawthorn Suites Hotel, 300 Meredith Drive, Durham, NC (Near the intersection of highways 54 and 55 in Research Triangle Park). The entire meeting is open to the public. Attendance will be limited only by the availability of space.

Preliminary Agenda

December 15 (Beginning at 8:30 a.m.)

Opening remarks by Dr. Michael Shelby, NIEHS and Director of the Center, Dr. John Moore, Sciences, International and CERHR, and Dr. Robert Kavlock, EPA and Chair of the Expert Panel on Phthalates.

The three previously written integrated evaluations and the four new ones (di-isodecyl phthalate, di-isononyl phthalate, di-n-butyl phthalate, and di-n-hexyl phthalate) will be discussed in plenary session. Following agreement on the integrated evaluations, panel discussion will follow to identify areas where there is broad panel agreement as well as issues requiring further discussion by workgroups of the panel. Time will be available to members of the public for comment.

December 16 (8:30 a.m.)

The meeting will focus on drafting summary statements on the seven phthalate esters. This will be accomplished through an iterative series of workgroup discussions and plenary sessions.

December 17 (11 a.m. Tentatively)

Summary statements reflecting significant conclusions and judgements reached by the panel workgroups for each of the phthalates will be presented, discussed, and agreed to by the entire expert panel in plenary session. Closing comments by Dr. Michael Shelby and Dr. George Lucier, NIEHS.

Registration for the Meeting

Contact:
Ms. Peggy Sheren, CERHR, 1800 Diagonal Road, Suite 500, Alexandria, VA 22314-2808, Phone: (703) 838-9440.

For additional information on the NTP Center and the Phthalates Review visit the web at: http://cerhr.niehs.nih.gov/

NTP Interagency Center for the Evaluation of Alternative Toxicological Methods

Evaluation of the Frog Embryo Teratogenesis Assay--Xenopus (FETAX)

Background

The Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM), with participation by 14 Federal regulatory and research agencies and programs, was established in 1997 to facilitate cross-agency communication and coordination on issues relating to validation, acceptance, and national/international harmonization of toxicological test methods. The Committee seeks to promote the scientific validation and regulatory acceptance of toxicological test methods that will enhance agencies' ability to assess risks and make decisions, and that will refine, reduce, and replace animal use whenever possible. The NTP Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM), provides administrative and technical support for ICCVAM, and serves as a communication and information resource. NICEATM and ICCVAM collaborate to carry out related activities needed to develop, validate, and achieve regulatory acceptance of new and improved test methods applicable to Federal agencies.

Evaluation of FETAX

ICCVAM and NICEATM are currently planning an Expert Panel Meeting to assess the current validation status of the Frog Embryo Teratogenesis Assay-Xenopus (FETAX), a method proposed for evaluating the developmental toxicity potential of chemicals (Bantle JA, 1995, FETAX--A Developmental Toxicity Assay Using Frog Embryos, Fundamentals of Aquatic Toxicology, 2nd ed., G.M. Rand, ed, Taylor and Francis, USA. pp. 207-230). Possible applications of FETAX to human health and environmental assessments may include screening and prioritizing compounds for further testing, evaluating complex mixtures and environmental samples, and as supplemental information in a weight-of-evidence evaluation of toxicity hazards. NICEATM is preparing a background document summarizing the initial studies and the performance characteristics of FETAX. The Expert Panel will evaluate the conclusions presented in the background document and address the potential uses of FETAX. The Expert Panel will address additional test method development and validation efforts that should be considered that might further enhance and characterize the usefulness of FETAX for various applications and other relevant aspects of the Xenopus model.

Request for Data

The NTP Center solicits data and information from completed, ongoing, or planned studies using or evaluating FETAX. Information should address the criteria for validation and regulatory acceptance provided in NIH publication 97-3981, "Validation and Regulatory Acceptance of Toxicological Test Methods: A Report of the ad hoc Interagency Coordinating Committee on the Validation of Alternative Methods" (http://ntp-staff.niehs.nih.gov/htdocs/ICCVAM/iccvam.html). Where possible, data and information should adhere to the guidance provided in the document, "Evaluation of the Validation Status of Toxicological Methods: General Guidelines for Submissions to ICCVAM" (http://iccvam.niehs.nih.gov/doc1.htm), which is available on request from the NTP Center at the address provided below. Information submitted in response to this request will be incorporated into the background material provided to the Expert Panel. Meeting information, including date, location, and availability of the background document, will be announced.

Correspondence should be directed to:

Dr. William S. Stokes
NTP Interagency Center for the Evaluation of Alternative Toxicological Methods, Environmental Toxicology Program
NIEHS/NTP, MD EC-17, PO Box 12233, Research Triangle Park, NC 27709;
919-541-3398 (phone); 919-541-0947 (fax); iccvam@niehs.nih.gov *(e-mail).*

NTP Requests Input and Nominations for New Chemicals for Study

The NTP requests nominations of chemicals and agents for study from all sources including academia, industry, labor unions, Federal and state agencies and the general public.

NTP studies include research and testing of selected chemicals and agents in order to characterize toxicity and determine possible adverse effects that may be associated with human and environmental exposure. Health-related effects addressed include chronic toxicity and carcinogenicity, as well as reproductive, developmental, genetic, immunological and neurological toxicity. Studies are also designed to address data gaps for specific chemicals such as fate and mechanisms of chemical toxicity and other effects that may be of human health concern. Data developed by NTP is critical to assessments of human health hazards associated with exposure to those chemicals and agents studied. NTP also supports an active program to develop and validate new and improved assays for chemical toxicity and assays that eliminate or minimize the use of laboratory animals.

Significant time and resources are consumed by the selection and testing of a single substance, so that each nomination must be considered carefully before final selection for NTP testing. Chemicals or agents for which a significant portion of the population is known to be exposed and for which there is a lack of adequate toxicological information available are the best candidates for study. All submitted nominations should be accompanied by a rationale for study, i.e. populations exposed, source of exposure, any known adverse health effects, etc. When possible, nominations should also be accompanied by available information describing production and use, possible adverse effects associated with exposure as

well as a chemical name, structure and CAS number.

The NTP will consider each nomination as it is received. Information received supporting each nomination will be supplemented with an additional literature search, and all material will be carefully reviewed by the NIEHS Nomination Faculty to establish priority for study. The nominator will be informed of the status of his/her nomination as it moves through the selection and testing process. In addition to formal nominations for study, comments on testing directions and priorities are welcome.

Please send all nominations and relevant information to:

Dr. Scott Masten
Office of Chemical Nomination and Selection (B3-10)
NIEHS
P.O. Box 12233
Research Triangle Park, NC 27709

Or visit the NTP web page to find more detailed information about the NTP chemical nomination and selection process as well as how to submit nominations online:
http://ntp-staff.niehs.nih.gov/NomPage/noms.html

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Workshop Summary: *"The Role of Human Exposure Assessment in the Prevention of Environmental Disease"*

September 22-24 1999, Doubletree Hotel, Rockville, MD

Knowledge of human exposures to agents of potential public health concern is critical for a successful and scientifically sound approach to the evaluation of human health risks resulting from environmental exposures. To address this topic, the NIEHS organized a two and one-half day workshop sponsored by the National Institutes of Health/National Institute of Environmental Health Sciences, National Toxicology Program, National Institutes of Health/Office of Rare Diseases, National Institutes of Health/National Cancer Institute, Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention/National Center for Environmental Health, U.S. Environmental Protection Agency/Office of Research and Development, and the American Industrial Health Council. The Workshop attracted more than 350 registrants from government, academia, industry, and labor and community groups.

The goals of the Workshop were to describe current opportunities and challenges in exposure assessment research, provide usable information on disease-specific chemical exposures that will enhance integration of exposure assessment with epidemiology and toxicology studies, and highlight approaches for further research and the development of effective prevention and intervention strategies. Plenary session speakers addressed such issues as exposure analysis methodology, exposure-disease relationships, regulatory and legislative issues, gene-environment interactions, disease prevention and intervention, and some current federal initiatives related to exposure assessment. Breakout sessions were based around five broad topics: Aggregate and Cumulative Exposure and Risk Assessment, Disproportionate Exposures and Disease Impact, Assessing Environmental Influence on Children's Health, Integrating Exposure, Dose, Response, and Susceptibility, and Exposure Assessment in Occupational and Environmental Epidemiology.

The product of this workshop will be a comprehensive report including a description of knowledge gaps and research needs, and specific recommendations and opportunities for addressing those needs. This research agenda will be designed to increase the available data characterizing human exposures as well as the application of that exposure information in establishing exposure-disease relationships, estimating risk, and designing effective disease prevention measures.

For the Workshop Program and Reports (when available) visit:
http://ntp-server.niehs.nih.gov

or contact:

Dr. Scott Masten
Environmental Toxicology Program (B3-10)
NIEHS
P.O. Box 12233
Research Triangle Park, NC 27709
Tel: (919) 541-5710 Fax: (919) 541-4632
E-mail: masten@niehs.nih.gov

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What's New at the Environmental Health Information Service (EHIS) Website?

To maintain the most extensive international online toxicology database, the EHIS continues to add to the NTP online library of technical reports as new items become available. Seven new technical reports and four new draft technical reports are now accessible by following the NTP Reports link at http://ehis.niehs.nih.gov/. A full listing of NTP reports is now online, showing availability of reports, with links to abstracts and full text of reports.

New Technical Reports:

- TR-462 Molybdenum Trioxide
- TR-469 AZT and AZT/a -Interferon A/D

- TR-471 Cobalt Sulfate Heptahydrate
- TR-472 Isobutyraldehyde
- TR-473 Theophylline
- TR-482 Furfuryl Alcohol
- TR-488 60-Hz Magnetic Fields

New Draft Technical Reports:

- TR-492 Gallium Arsenide
- TR-493 Emodin
- TR-494 Anthraquinone
- TR-496 Fumonisin B1

The EHIS has also recently added two new features to make the Web site even more user-friendly. Page numbers for *EHP* back issues have been added to the Back Issues Online page to make it easier to locate articles online using citation information. Also, a new option has been built into the existing Search page to allow nonsubscribers to filter out subscription-only content. Nonsubscribers can search faster by limiting their searches to the material they can access for free.

Visit the NTP Home Page at http://ntp-server.niehs.nih.gov
NTP Reports Available Online at http://ehis.niehs.nih.gov